

## Fig.1

Primer Sequences for PCR amplification of any SSA gene.

Primer names ECP 1 and ECP 2 [Expression cloning Primer (ECP)]

ECP 1 => 5'CAT AAA ATT TCT AAG ACG AAG GAT CCC TAT GTC 3'

ECP 2 => 5'GAG AGA AAG TTC CCC GTG TGA ATT CTA GCT AGG 3'

# Fig.2A

ATTGGATCTAAATAATGTACACTGGAGGTTCTGATTTTTCTATTATGAAAGGGATAGA 57  
 5 ATGTTAAATTTTATGATTTTTTATAATAAAAAATAGATATAAAATTTAGTAGTTTTAT 114  
 AAATTTTTCATAACAAAGGACTATCCTCCTTGCATAAAATTTCTAAGACGAAAAATC 171  
 CCTATGTCAAATGAAACACTTTTGAGCGTACTTTCTGATGAAACGCACTTTTGCTAAT 228  
 10 M S N E T L L S V L S D E T H F A N  
 CTAGTTGATGAACCTTCTTCATCTTGGTTAAAGACAGTATTTTCACTCAAGTAATA 285  
 L V D E L L L I L V K D S I F T Q V I  
 15 AAAGGCGAGGGAAAGACAGAATTAAGACATACTTACAGACAACACTGGTAAGTTT 342  
 K G E G K T E L K D I L T D N T G K F  
 AAAGAACTTATAGAAAGTGCAGGTAAAGACATACTAAAAGAGATACTTACAGACAAT 399  
 K E L I E S A G K D I L K E I L T D N  
 20 ACCGGCAATTTTAAAGGACTTATAGAAGGTAATGGTAAGACGGAGGCAAAAGAGGTA 456  
 T G N F K G L I E G N G K T E A K E V  
 CGCACTAATGAAAAATTCAGGAGCTTTTTGGAAGCAATGGTAAGGACATACTGAAA 513  
 25 R T N E K F K E L F G S N G K D I L K  
 GACATTCTTACTGATAACACCGGTAACCTTAAAGGCCTTATAGAAAGTGCAGCTAAG 570  
 D I L T D N T G N F K G L I E S A A K  
 30 GGTAAGCTGAAAGATCTTCTTATTGATGAAAAATTTCAAAAATTATTCGAGGATGAA 627  
 G K L K D L L I D E K F Q K L F E D E  
 ACGAAAGCTGGTCGTGTAAAGAAATACTTACAGACAGCAACGCTAAGGAAATACTC 684  
 T K A G R V K E I L T D S N A K E I L  
 35 ACAAATGAAGTAGCAAAAGAGGTACTAAAATCCGATAAATTCAAGGAGGCAATAACT 741  
 T N E V A K E V L K S D K F K E A I T  
 GGCGATGGTAAGGACGCACTAAAAGAGATACTTACTTGTGATAAATTTAAAGAGGCT 798  
 40 G D G K D A L K E I L T C D K F K E A  
 GTAACAGGCAATGGTAAAGACATACTAAAAGGTATACTTACAGATAGCACTGGTAAA 855  
 V T G N G K D I L K G I L T D S T G K  
 45 TTTAAGAAGCTTATAGAAAGTACTAGTAAAGACATACTAAAAGAGATACTTACAGAT 912  
 F K E L I E S T S K D I L K E I L T D  
 AATACCGGTAACCTTTAAAGGCCTTATAGAAAGCACTGGCAAGGAGAAAGTAAAGAA 969  
 N T G N F K G L I E S T G K E K V K E  
 50 CTTCTTATCGATGGGAAGTTTAAAGGACCTGTTTACTGATGCAACAAAAGCCGGTTAT 1026  
 L L I D G K F K D L F T D A T K A G Y  
 GTAAAAGAAATACTCACGAACGATACAGCTAAGGAAGTACTTACAGATCAAACAGCA 1083  
 V K E I L T N D T A K E V L T D Q T A  
 55 AAGGAGGTCCTAAAAGATAGTACAGCTAAAGACATATTAAGGACACAAACGCAGCT 1140  
 K E V L K D S T A K D I L K D T N A A  
 GCGGTACTAAAAACAGCACAGCTAAAGAAATACTTACAAACCAACCGCTAAAGAA 1197  
 60 A V L K N S T A K E I L T N Q T A K E  
 GTGCTTACAGATGGTACATCCAAAGAAGTACTAAAAGAGATACTTACTTGTGATAAA 1254  
 V L T D G T S K E V L K E I L T C D K  
 TTTAAGAGGCAGTAACAGGAGATGGTAAAGACATACTAAAAGGTATACTTACAGAT 1311  
 65 F K E A V T G D G K D I L K G I L T D  
 AGCACTGGTAAGTTTAAAGAACTTATAGAAAGTACTGGTAAAGACATACTGAAAGAC 1368  
 S T G K F K E L I E S T G K D I L K D

Fig.2B

ATTCTTACAGATAGCACTGGTAAATTTAAAGAACTTATAGAAGTACTGGTAAAGAAC 1425-  
5 I L T D S T G K F K E L I E V L V K N  
AAGCTAAAAGAGATTCTTACAGATAACACCGGTAACCTTCAAAGGGCTTGTAGAAGGC 1482  
K L K E I L T D N T G N F K G L V E G  
10 GCCGGAAGGATGAAGCAAAGCAGTACTTACTGACGAGAAATTTAAAGGCTTGT 1539  
A G K D E A K A V L T D E K F K G L F  
GATGACAAAACAATAGCTGGCTATGTAAAGAAATACTCACCAGCGAGAAGTTTAAA 1596  
15 D D K T I A G Y V K E I L T S E K F K  
AAACTGTTTGAAGTGCAGGTAAGACTAAAGTAAAGAACTCCTCATTGATGAGAAG 1653  
K L F E S A G K T K V K E L L I D E K  
20 TTTCAAAAATTATTTGAGGATGACACGAAAGCCAGTCATGTAAAGAAATACTCAG 1710  
F Q K L F E D D T K A S H V K E I L T  
AACGATACAGCTAAGGAAATACTTACAGATCAAACAGCTAAAGAAGTCCTAAAGGAT 1767  
N D T A K E I L T D Q T A K E V L K D  
25 AGTACAGCTAAAGAGATATTAAAGGACACAAACGCAGCTGCGCTACTAAAAGACAGC 1824  
S T A K E I L K D T N A A A L L K D S  
ACAGCAAAAGAGGTACTAAAATCCGATAAATTTAAAGATGCAATAACTGGTGCTGGT 1881  
30 T A K E V L K S D K F K D A I T G A G  
AAGGACGCACTAAAAGAGATACTTACTTGTGATAAATTTAAAGAGGCAGTAACAGGC 1938  
K D A L K E I L T C D K F K E A V T G  
AATGGTAAAGACATACTAAAAGGTATACTTACAGATAGCACTGGTAAATTTAAAGAG 1995  
35 N G K D I L K G I L T D S T G K F K E  
CTAATAGAAAGCACTGGTAAGGATAAGCTAAAAGAGATTCTTACAGATAACACCGGT 2052  
L I E S T G K D K L K E I L T D N T G  
AACTTTAAATTTCTTGTAGAAGGCGCCGGTAAGGATGAAGCAAAGCAGTACTTACT 2109  
40 N F K F L V E G A G K D E A K A V L T  
CACGAGAAATTTAAAGACTTGTTTAATGTCAAACAACAGCTGGCTACGTGAAAGAA 2166  
H E K F K D L F N V K T T A G Y V K E  
45 ATACTTACCAGCGACAAGTTTAAAGAACTGTTTACTGATGCAACAAAAGCTGGCTAC 2223  
I L T S D K F K E L F T D A T K A G Y  
GTGAAAGAAATACTCACGAACGATACAGCTAAGGAAATACTTACAGATCAAACAGCT 2280  
V K E I L T N D T A K E I L T D Q T A  
50 AAAGAAGTCCTAAAGGATGGTACAGCTAAAGACATATTAAAGGACACAAACGCACGT 2337  
K E V L K D G T A K D I L K D T N A R  
GCGCTACTAAAAGACAGCACAGCCAAAGAAGTACTAAAATGCGATAAATTTAAGGAA 2394  
55 A L L K D S T A K E V L K C D K F K E  
GCAATAACAGGTGCCGGTAAAGATGAGCTAAAATACATACTCACTAATAGCGAGTTT 2451  
A I T G A G K D E L K Y I L T N S E F  
60 AAAAGCTTATTTTCATAGCAAAGATAGCGCTGAAGCTGTTAAAGCAATATTTACCCAC 2508  
K S L F H S K D S A E A V K A I F T H  
AATAAGTTTAAAGAACTACTTGAACATGCAAGAACAACCCAAACAATACGCAGGCGC 2565  
N K F K E L L E H A R T T Q T I R R R  
65 TTTGCAATGCTTTAGATCAACTAAAAGCGCTAATTACCTGTGGCAGCGGTGATCAT 2622  
F A N A L D Q L K A L I T C G S G D H



Fig.2C

5 GCAACAAACTACAAGCCTTTGGAAGTGCCTATGCACCAAAAAGAAGGAGTTGTGC 2679  
A T K L Q A F G S A L C T K K K E L C  
AGTAATTTTAGCTGTGCAAACTGCAGTAGTACAACAACTGCATAATTACGTAGCGCT 2736  
S N F S C A N C S S T T T A \*  
10 AGGTGGGGGTAATTTACCCCCACCTAGCTAGAATCACACGGGGAACCTTTCTCTCTAT 2793  
**Transcription termination**  
TACTAGGGTCTTAGGATTTACAAACAAATTACTATGACAGCCA 2836

# Fig.3A

ATTGGATCTAAATAATATACACTGGAGGTTCTGATTTTCTATTATGAAAGGGATAGA 57  
 ATGTTAAATTTTATGATTTTTTATAATAAAAATAGATATAAAATTTAGTAATTTTAT 114  
 5 AAATTTTTTATAACAAAGGACTACCCTCCCTACATAAAATTTCTAAGACGAAAAATC 171  
 CCTATGTCAAATGAAACACTTCTGAGCGTACTTTCTGATGAAACGCACTTTGCTAAT 228  
 M S N E T L L S V L S D E T H F A N  
 10 CTAGTTGATGAACCTTCTCTCAGCTTGGTTAAAGACAGTATTTTCACTCAAGTAATA 285  
 L V D E L L L S L V K D S I F T Q V I  
 AAAGGCGAGGGAAAGACAGAATTAAGACATTCTTACAGATAGCACTGGCAAGTTT 342  
 K G E G K T E L K D I L T D S T G K F  
 AAAGAGCTGATAGGAAGTAGCGGTAAGGATATACTAAAAAGCATACACACAGATGGC 399  
 K E L I G S S G K D I L K S I H T D G  
 15 TCAGGCAACTTTAAAGGCCTTATACAAAGCACAGGTAAGGCAGAAGTAAAGAGGTA 456  
 S G N F K G L I Q S T G K A E V K E V  
 CTCACTAATGAAAAATTCAAAGAGCTTTTTGGAAGCGAAGGTAAAGACATACTAAAA 513  
 L T N E K F K E L F G S E G K D I L K  
 20 GAGATACTTACAGACAATACCGGCAATTTTAAAGGGCTTATAGAAGGCAAAGGTAAG 570  
 E I L T D N T G N F K G L I E G K G K  
 GATGAAGCAAAGGGAGTACTTACTGACGAGAAATTTAAAGGCTTGTGTTGATGACAAA 627  
 D E A K G V L T D E K F K G L F D D K  
 ACAATAGCTGGCTATGTAAAGAAATACTCACCAGCGAGAGTTTAAAAAACTGTTTG 684  
 T I A G Y V K E I L T S E S L K N C L  
 25 AAAGGTGCAGGTAAGACTAAAGTAAAGAACTCCTCATTGATGAGAAGTTTCAAAAA 741  
 K G A G K T K V K E L L I D E K F Q K  
 TTATTTGAGGATGACACGAAAGCCAGTCATGTAAAGAAATACTTACAGACAGTAAC 798  
 L F E D D T K A S H V K E I L T D S N  
 30 GCTAAGGAAATACTCACAAATGAAGTAGCAAAGAGGTACTAAAATCCGATAAATTT 855  
 A K E I L T N E V A K E V L K S D K F  
 AAAGATGCAATAACTGGTGCTGGTAAGGACGCACTAAAAGAGATACTTACTTGCGAT 912  
 K D A I T G A G K D A L K E I L T C D  
 AAATTTAAAGATGCAGTAACAGGTAATGGTAAGGACGCACTAAAAGAAATACTTACT 969  
 K F K D A V T G N G K D A L K E I L T  
 35 TGCGATAAATTTAAAGATGCAGTAACAGGCAATGGTAAAGACAAGCTAAAAGAGATT 1026  
 C D K F K D A V T G N G K D K L K E I  
 CTTACTCACGAGAAGTTTAAAGCACTCATAGAGAGTGAAGGCAAAGACATACTGAAA 1083  
 L T H E K F K A L I E S E G K D I L K  
 40 GAAATTCCTTACAGATAGTACCGGTAAATTTAAAGAGCTAATAGAAAGCACTGGTAAA 1140  
 E I L T D S T G K F K E L I E S T G K  
 GACAAGCTAAAAGAGATTTTCACAGATAACACCGGTAACTTTAAAGGGCTTGTAGAA 1197  
 D K L K E I F T D N T G N F K G L V E  
 GGCGCCGGTAAGGATGAAGCAAAGCAGTACTTACTCACGAGAAATTTAAAGACTTG 1254  
 G A G K D E A K A V L T H E K F K D L  
 45 TTTAATGACAAAACAACAGCTGGCTACGTGAAAGAAATACTCACCAGTGATAAGTTT 1311  
 F N D K T T A G Y V K E I L T S D K F  
 AAAAAATTATTTGAGGACAATACCAAAGCTGGCTACGTGAAAGAAATACTCACGAAC 1368  
 K K L F E D N T K A G Y V K E I L T N

Fig.3C

GATACAGCTAAGGAAATACTCACAAATCAAACAGCTAAAGAAGTCCTAAAAGACAGC 1425  
D T A K E I L T N Q T A K E V L K D S  
5 ACAGCCAAAGAAATACTAAAATGCGATAAATTTAAGGACGCAATAACAGGCGCTGGT 1482  
T A K E I L K C D K F K D A I T G A G  
AAAGATGAGCTAAAATACATACTCACTAATAACGAGTTTAAAAGCTTATTTGATAGC 1539  
K D E L K Y I L T N N E F K S L F D S  
10 AAAGATAGCGCTGAAGCTGTTAAAGCAATATTTACCCACAATAAGTTTAAAGAACTA 1596  
K D S A E A V K A I F T H N K F K E L  
CTTAAACGTGCAAGGACAACCCAAAAAATACGGCGGGCGCTTGCAGCTGCTTTAGAT 1653  
L K T C K D N P K N T A A L A A A L D  
GAACTAAAAGATCTAATTACGTGTGACCGCAATAATCATGCAACAAAACCTACAAGCC 1710  
E L K D L I T C D R N N H A T K L Q A  
15 TTTGGAAGTGCACTATGCACCAGAAAAAAGAGTCGTGCGATAATTTTAGCCCTGCA 1767  
F G S A L C T R K K E S C D N F S P A  
AGCTGCAGTAGTACAGCAGCTACATAATTACGTAGCGCTAGGTGGGGGTAAATTACC 1824  
S C S S T A A T **Transcription termination**  
20 CCCACCTACGTAGAATCACACGGGGAACTTTCTCTCTATTACTGAGGTCTTAGGATT 1881  
TACTTTCAAATTACTATGACAGCCGATTAAATTATTATGACAGACGATACACTTTT 1937

ATTGGATCTAAATAATGTACACTGGAGGTTTCGTATTTTCTATTATGAAAGGGATAGA 57  
-35 -10 +1  
ATGTTAAATTTTATGATTTTTTATAATAAAAATAGATATAAAATTTAGTAGTTTTAT 114  
AAATTTTTCATAACAAAGGACTATCCTCCTTGCATAAAATTTCTAAGACGAAAAATC 171  
RBS  
CTTATGTCAAATGAAACACTTCTGAGCGTACTTTCTGATGAAACGCACTTTGCTAAT 225  
M S N E T L L S V L S D E T H F A N  
CTAGTTGATGAACCTTCTTCTCAGCTTGGTTAAAGACAGTATTTTCACTCAAGTAATA 285  
L V D E L L L S L V K D S I F T Q V I  
AAAGGCGAGGGAAAGACAGAATTAAGACATTCTTACAGATAGCACTGGCAAGTTT 342  
K G E G K T E L K D I L T D S T G K F  
AAAGAGCTGATAGGAAGTAGCGGTAAGGATATACTAAAAAGCATACTCACAGATGGC 399  
K E L I G S S G K D I L K S I L T D G  
TCAGGCAACTTTAAAGGCCTTATACAAAGCACAGGTAAGGCAGAAGTAAAGAGGTA 456  
S G N F K G L I Q S T G K A E V K E V  
CTCACTAATGAAAAATTCAAAGAGCTTTTTTGAAGCGATGGTAAGGATATATTA AAA 513  
L T N E K F K E L F G S D G K D I L K  
GACATACTCACAGATAGCACTGGTAAGTTTAAAGAGCTGATAGGAAGTAGCGGTAAG 570  
D I L T D S T G K F K E L I G S S G K  
GACATACTAAAAACATTCTTACAGATAGCACCGGTAAGTTTAAAGAACTTATAGAA 627  
D I L K N I L T D S T G K F K E L I E  
AGTGCAGGTAAGGGTAAGCTGAAAGACCTTCTTATTGATGGAACTTTAAAAAATTA 684  
S A G K G K L K D L L I D G N F K K L  
TTTGAGGATGACACGAAAGCTGCTCATGTAAAAGAAATACTTACAGACAGCAACGCT 741  
F E D D T K A A K V K E I L T D S N A  
AAGGAAATACTCACAAATGAAGTAGCAAAAGAGGTAATAAAATCCGATAAATTTAAA 798  
K E I L T N E V A K E V L K S D K F K  
GATGCAATAACTGGTGCTGGTAAGGACGCACTAAAAGAGATACTTACTTGCGATAAA 855  
D A I T G A G K D A L K E I L T C D K  
TTTAAAGATGCAGTAACAGGCAATGGTAAGGACGCACTAAAAGAAATACTTACTTGC 912  
F K D A V T G N G K D A L K E I L T C  
GATAAATTTAAAGATGCAGTAACAGGCAATGGTAAAGACAAGCTAAAAGAGATTCTT 969  
D K F K D A V T G N G K D K L K E I L



Fig.4B

ACTCACGAGAAGTTTAAAGCACTCATAGAGAGTGAAGGCAAAGACATACTGAAAGAC 1026  
T H E K F K A L I E S E G K D I L K D  
ATTCTTACAGATAGTACCGGTAAATTTAAAGAGCTAATAGAAAGCACGGGTAAGGAT 1083  
I L T D S T G K F K E L I E S T G K D  
GAAGCAAAAGCAGTACTTACTGACGAGAAATTTAAAGACTTGTTTAATGACAAAACA 1140  
E A K A V L T D E K F K D L F N D K T  
ACAGCTGGCTACGTGAAAGAAATACTCACCAGTGATAAGTTTAAAAAATTATTTGAG 1197  
T A G Y V K E I L T S D K F K K L F E  
GACAATACCAAAGCTGGCTACGTGAAAGAAATACTCACGAACGATACAGCTAAGGAA 1254  
D N T K A G Y V K E I L T N D T A K E  
ATACTTACCAATCATAAATTTAAGGAAGCAATAACTGGCGATGGTAAAGACATACTG 1311  
I L T N H K F K E A I T G D G K D I L  
AAAGAAATTCTTACAGATAGCACTGGTAACCTTTAAAGGCGCAATAACAGGTGCCGGT 1368  
K E I L T D S T G N F K G A I T G A G  
AAAGATCAGCTAAAATACATACTCACTAATAGCGAGTTTAAAAGCTTATTTGATAGC 1425  
K D Q L K Y I L T N S E F K S L F D S  
AAAGATAGCGCTGAAGCTGTTAAAGAAATATTTACCCACAGTAAGTTTAAAGAATA 1482  
K D S A E A V K E I F T H S K F K E L  
CTTAAACGTGCAAGGACAACCCAAAAAATACGGCGGCGCTTGCAGCTGCTTTAGAT 1539  
L K T C K D N P K N T A A L A A A L D  
GAACTAAAAGATCTAATTACCTGTGGCAGCGGTGATCATGCAACAAAACACTACAAGCC 1596  
E L K D L I T C G S G D H A T K L Q A  
TTTGGAAGTGCACTATGCACCAGAAAAAAGAGTCGTGCGATAATTTTAGCTCTGCA 1653  
F G S A L C T R K K E S C D N F S S A  
AACTGCAGTAGTACAACAACCTGCATAATTACGTAGCGCTAGGTGGGGGTAATTTACC 1710  
N C S S T T T A \* **Transcription termination**  
CCCACCTAGCTAGAATCACACGGGGAACCTTCTCTCTATTACTAGGGTCTTAGGATT 1767  
ACAAACAAATTACTATGACAGCCA 1791



Fig.5

50kD antigen

MSNETLLSVLSDETHFANLVDELLSLVKDSIFTQVIKGEKTELKDILTDSTGKFKELGSSGKDILKSIHTDGSNGFKGLIQSTGKAEVKEVLTNEKF  
KELFGSEGKDILKEILTDNTGNFKGLIEGKGKDEAKGVLTOEKFKGLFDDKTIAGYVKEILTSESLKNCLKGAGTKVKVKEILLIDEKFQKLFEDTKASHV  
KELTDSNAKEILTNEVAKEVLKSDKFKDAITGAGKDAALKEILTCDFKDAVTGNGKDALKKEILTCDFKDAVTGNGKDALKKEILTHEKFALIESEG  
KDILKEILTDSTGKFKEILIESTGKDILKEIFTONTGNFKGLVEGAGKDEAKAVLTHEKFDFNDKTTAGYVKEILTSDFKFKLFDONTKAGYVKEILT  
NDTAKEILTNTQAKEVLKDSTAKEILKCDKFDAITGAGKDELKYILTNNFEKSLFDSKDSAEAVKAIFTNKFKEILLKTKCDNPKNTAALAAALDE

LKDITCDRNNHATKLQAFGSALCTRKKESCDNFPASCSTAAT

85kD antigen

MSNETLLSVLSDETHFANLVDELLILVKDSIFTQVIKGEKTELKDILTDNTGKFKEILIESAGKDILKEILTONTGNFKGLIEGNGKIEAKEVRTNEKF  
KELFGSNGKDILKDILTDNTGNFKKGLIESAAKGKLDLLIDEKFQKLFEDETKAGRVKEILTDSNAKEILTNEVAKEVLKSDKFKEAITGDGKDALKE  
ILTCDFKFEAVTGNGKDILKGILTDSTGKFKEILIESISKDILKEILTDNTGNFKGLIESTGKKEVKEILLIDGKFDFLTDATKAGYVKEILTNDTAKVEYL  
TDQTAKEVLKDSTAKDILKDTNAAAVLKNSTAKEILTNQTAKEVLTDGTSKEVLKEILTCDFKFEAVTGDKDILKGILTDSTGKFKEILIESTGKDILK  
DILTDSTGKFKEILIEVLVKNKLKEILTDNTGNFKGLVEGAGKDEAKAVLTDEKFQGLFDDKTIAGYVKEILTSFKFKLFESAGTKVKVKEILLIDEKFQKL  
FEDDTKASHVKEILTNDTAKVEILTQJAKEVLKDSTAKEILKDTNAAALLKDSTAKEVLKSDKFKDAITGAGKDAALKEILTCDFKFEAVTGNGKDIL  
KGILTDSTGKFKEILIESTGKDILKEILTDNTGNFKFLVEGAGKDEAKAVLTHEKFDFNVKTTAGYVKEILTSDFKFKELFTDATKAYVKEILJNDTAK  
ILTDQTAKEVLKDGTAKDILKDTNARALLKDTAKEVLKCDKFKEAITGAGKDELKYILTNSFEKSLFHSKDSAEAVKAIFTNKFKEILLEHARTTQITIR  
RRFANALDQLKALITCGSGDHATKLQAFGSALCTKKKELCSNFSCNSTTAA

Fig.6

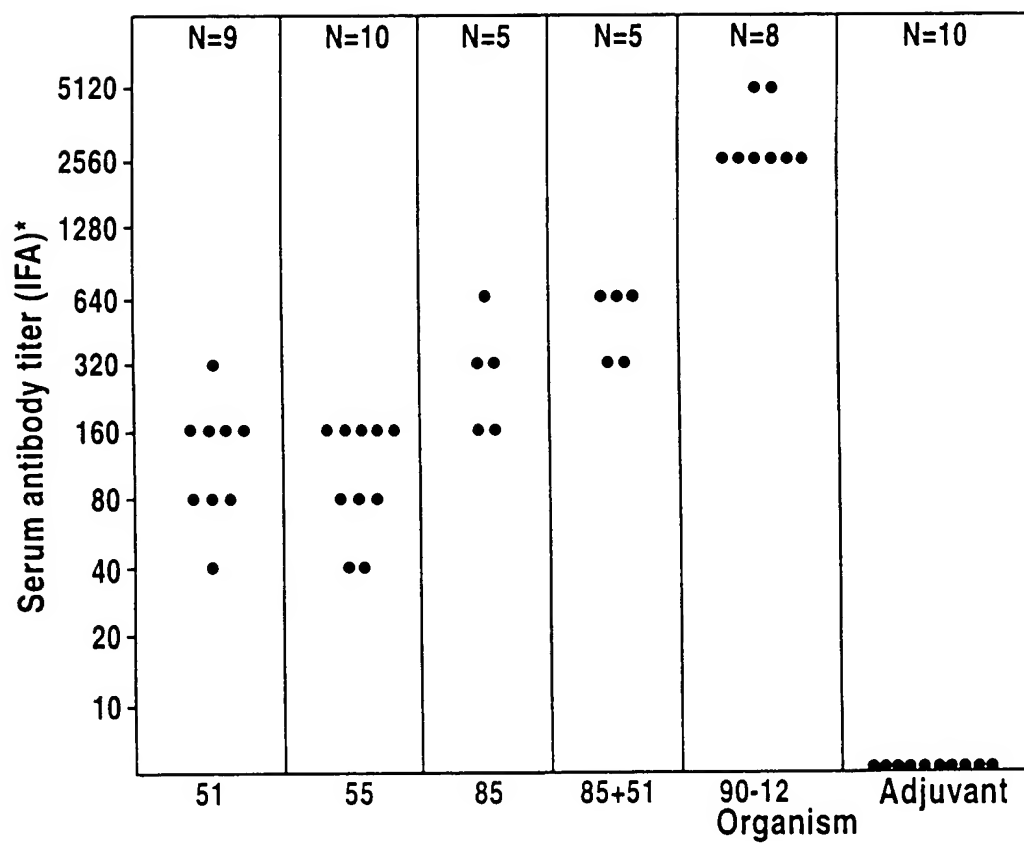


Fig.7

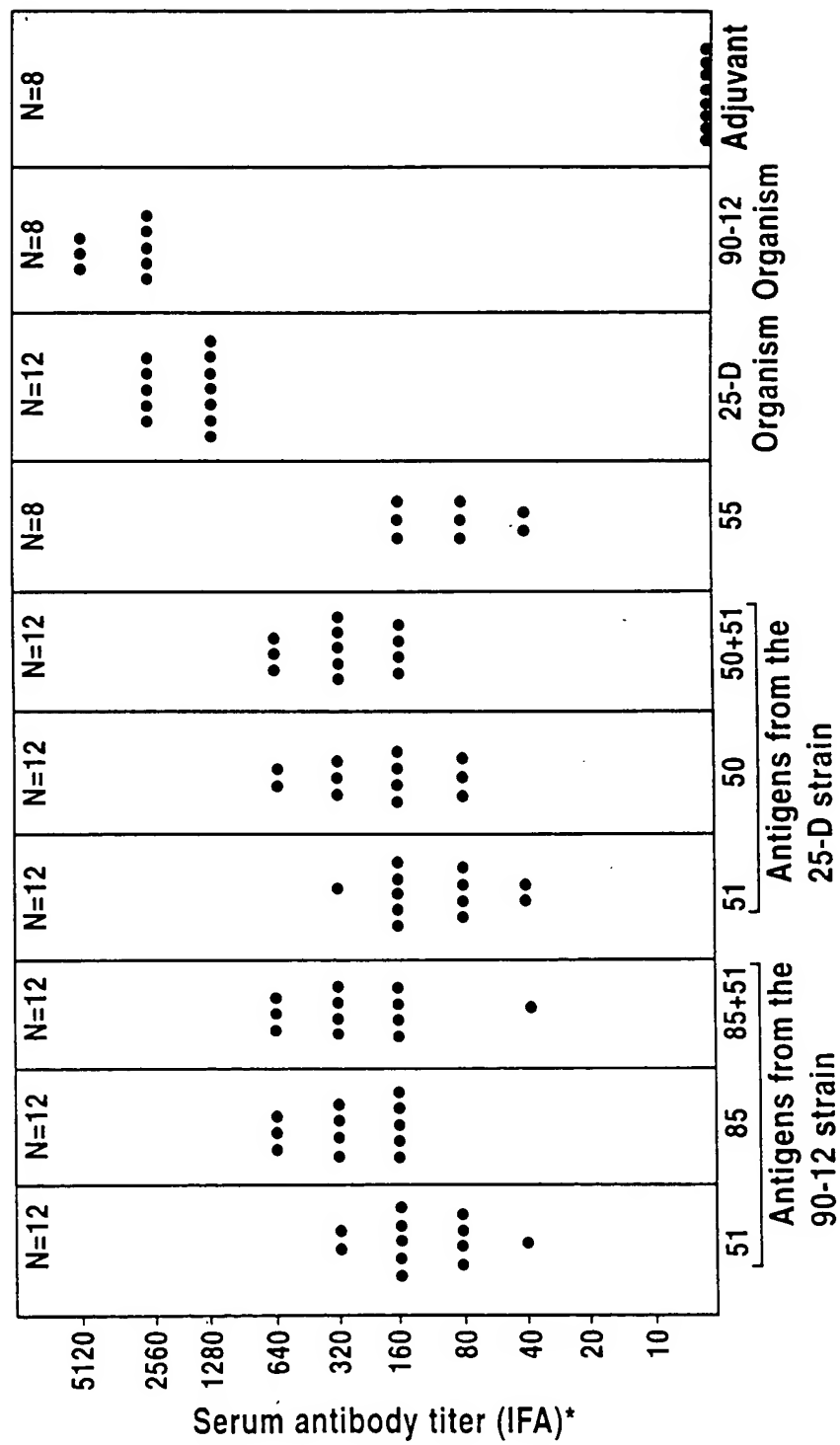


Fig.8

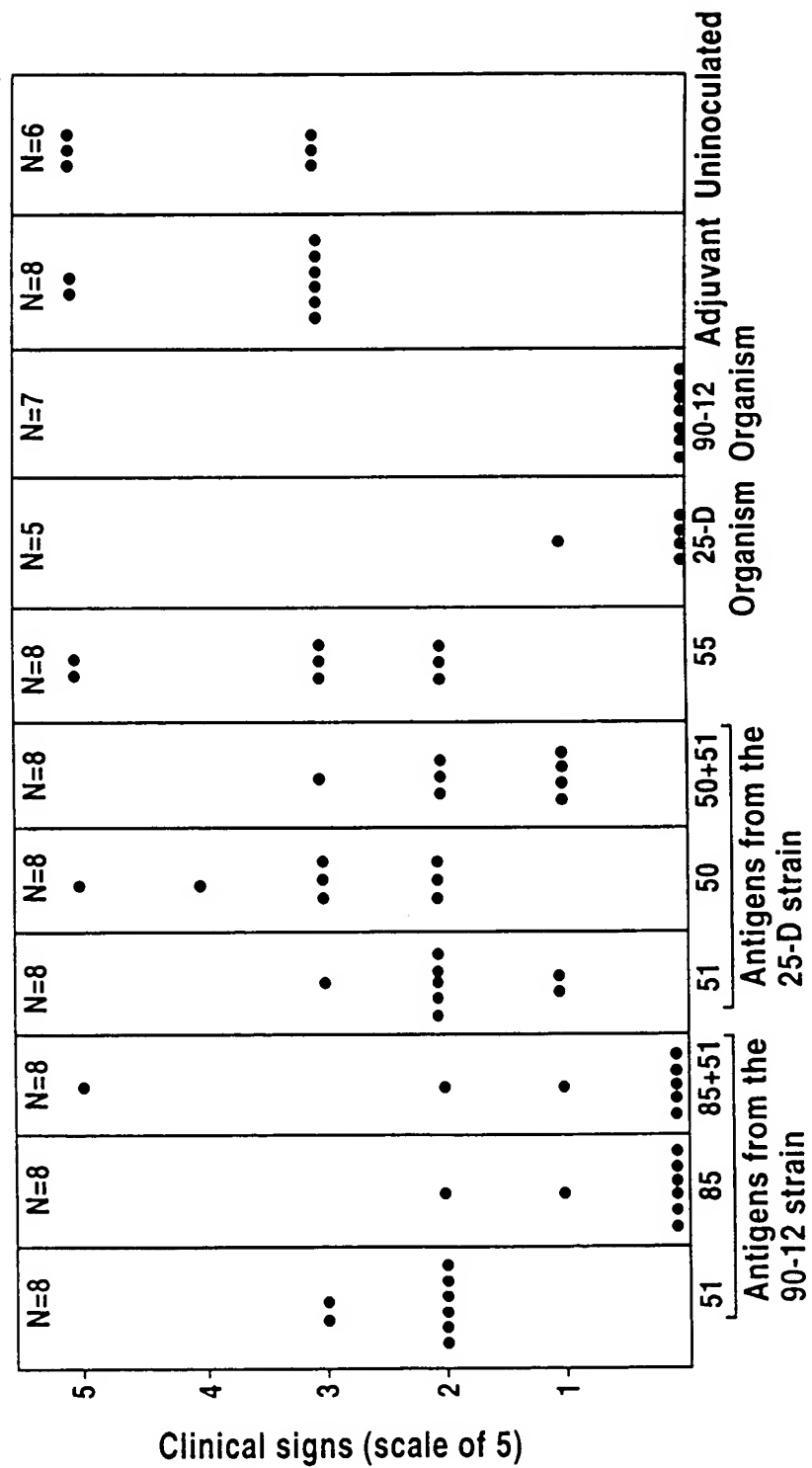




Fig.9

